I Claim:

1. An engine, including:
a rotatable flywheel having a flywheel axis and including an undulating cam surface;
an expansible chamber device including a piston having a central axis radially spaced from said flywheel axis, said piston abutting said cam surface and movable in a cycle between retracted and extended positions;
said cycle including a power stroke from said retracted position to said extended position to urge said piston against said cam surface to thereby rotate said flywheel, and a compression stroke from said extended position to said retracted position in response to said cam surface; and
said cam surface is configured to control at least one engine parameter, including at least one of a compression ratio, a duration of intake stroke, a duration of exhaust stroke, a duration of combustion stroke, a duration of power stroke, a compression stroke pattern, a volumetric efficiency, and a power stroke pattern.

2. An engine as defined in claim 1, wherein amplitude of a portion of said undulating cam surface at a certain radius is selected to control an engine parameter.

3. An engine as defined in claim 1, wherein amplitude of a portion of said undulating cam surface at a certain radius is selected to control a length of piston travel within said expansible chamber for said portion.

4. An engine as defined in claim 1, wherein arc length of a portion of said undulating cam surface at a certain radius is selected to control an engine parameter.

5. An engine as defined in claim 1, wherein arc length of a portion of said undulating cam surface at a certain radius is selected to control duration of an event related to an engine parameter.

6. An engine as defined in claim 1, wherein amplitude and arc length of a portion of said undulating cam surface at a certain radius are selected to control at least one engine parameter.

7. An engine as defined in claim 1, wherein amplitude and arc length of a portion of said undulating cam surface at a certain radius are selected to control at least one engine parameter for said portion.

8. An engine as defined in claim 1, wherein the expansible chamber device is radially moveable relative to said flywheel axis.

9. An engine as defined in claim 8, wherein radial movement of said expansible chamber with respect to said flywheel axis will vary at least one engine parameter.

10. An engine as defined in claim 9, wherein amplitude and arc length of a portion of said undulating cam surface do not vary radially.

11. An engine as defined in claim 9, wherein amplitude and arc length of a portion of said undulating cam surface vary radially.

12. An engine as defined in claim 9, wherein a distance of radial movement is selected to control at least one engine parameter.

13. An engine as defined in claim 1, wherein the central axis is angled with respect to said flywheel axis so as to cause the piston to exert more force on the cam surface during a power stroke.

14. An engine as defined in claim 1, wherein said cycle further includes an intake stroke from said retracted position to said extended position in response to said cam surface and an exhaust stroke from said extended position to said retracted position in response to said cam surface.

15. An engine as defined in claim 1, wherein said piston is connected to said cam surface while remaining moveable along the cam surface.

16. An engine as defined in claim 1, wherein said piston includes on the outboard end thereof a cam roller for engagement with said cam surface.

17. An engine as defined in claim 16, further comprising a retaining rail to maintain said cam roller in engagement with said cam surface while remaining moveable along said cam surface.

18. An engine as described in claim 1, further comprising:

an other undulating cam surface on an opposite face of said flywheel, said other undulating cam surface having an other expansible chamber device including an other piston having a central axis radially spaced from said flywheel axis, said other piston abutting said other cam surface and movable in a cycle between retracted and extended positions including a power stroke from said retracted position to said extended position to urge said other piston against said other cam surface to thereby rotate said flywheel, and a compression stroke from said extended position to said retracted position in response to said other cam surface; and

at least one of said cam surfaces is configured to control at least one engine parameter, including at least one of a compression ratio, a duration of intake stroke, a duration of exhaust stroke, a duration of combustion stroke, a duration of power stroke, a compression stroke pattern, a volumetric efficiency, and a power stroke pattern.

19. An engine, including:

first and second coaxial and axially spaced flywheels operatively connected to a coaxial output shaft and including respectively first and second undulating cam surfaces facing each other; and

an expansible chamber device disposed between said flywheels and radially offset relative to said output shaft, said expansible chamber device including first and second opposed pistons movable in a cylinder between retracted and extended positions, said pistons adapted for engagement with respectively said first and second cam surfaces;

said pistons operating in cycles including power strokes from said retracted positions to said extended positions to urge said pistons against respective cam surfaces to thereby rotate corresponding flywheels, and compression strokes from said extended positions to said retracted positions in response to said cam surfaces; and

at least one of said cam surfaces is configured to control at least one engine parameter, including at least one of a compression ratio, a duration of intake stroke, a duration of exhaust stroke, a duration of combustion stroke, a duration of power stroke, a compression stroke pattern, a volumetric efficiency, and a power stroke pattern.

20. An engine as defined in claim 16, wherein one of said flywheels is directly connected to said output shaft for rotation therewith, and the other of said flywheels is operatively connected to said output shaft for rotation in the opposite direction of rotation.

21. An engine, including:

first and second coaxial and axially spaced flywheels operatively connected to a coaxial output shaft and respectively including first and second undulating cam surfaces facing each other with one of said flywheels being directly connected to said output shaft for rotation therewith, and the other of said flywheels being operatively connected to said output shaft for rotation in the opposite direction of rotation; and

an expansible chamber device disposed between said flywheels and radially offset relative to said output shaft, said expansible chamber device including a stationary cylinder with air inlet, fuel inlet, and exhaust ports, and first and second opposed pistons movable in said cylinder in opposite directions between retracted positions and extended positions, said pistons each including on the outboard end thereof a cam roller for engagement with a corresponding one of said cam surfaces;

said pistons operating in cycles including power strokes from said retracted positions to said extended positions, and compression strokes from said extended positions to said retracted positions;

said power strokes urging said cam rollers of said first and second pistons against respectively said first and second cam surfaces to thereby rotate said first and second flywheels;

said compression strokes responsive to action of said first and second cam surfaces against said cam rollers of respectively said first and second pistons to move said pistons to said retracted positions; and

at least one of said cam surfaces is configured to control at least one engine parameter, including at least one of a compression ratio, a duration of intake stroke, a duration of exhaust stroke, a duration of combustion stroke, a duration of power stroke, a compression stroke pattern, a volumetric efficiency, and a power stroke pattern.